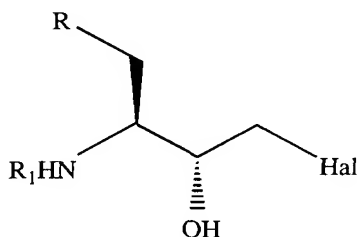


CLAIMS

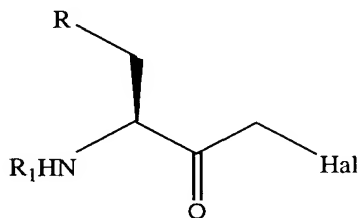
We Claim:

- 5 1. A stereoselective process for the preparation of (1S,2S)-1-halo-2-hydroxy-3-(protected)amino-4-substituted butanes represented by the formula I



I

- 10 wherein Hal is halogen, R is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl and R₁ is a protecting group for the amino function comprising contacting a (1S)-1-halo-2-oxo-3-(protected)amino-4-substituted butane represented by formula II



II

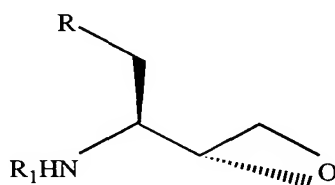
- 15 wherein Halo, R and R₁ are as defined above with a microorganism capable of catalyzing the stereoselective reduction of the compound represented by formula II wherein said microorganism is selected from the group consisting of *Rhodococcus erythropolis* ATCC 4277, *Rhodococcus erythropolis* DSM 6971 and *Rhodococcus sp.* ATCC 21227, *Rhodococcus erythropolis* ATCC 27854 and *Brevibacterium sp.* ATCC19653 under conditions such that said reduction is effected, and recovering said compound represented by formula I.
- 20

2. A process in accordance with Claim 1, wherein Hal is chloro, R is phenyl and R₁ is t-butoxycarbonyl.
- 5 3. A process in accordance with Claim 1, wherein said microorganism is *Rhodococcus erythropolis* ATCC 4277.
4. A process in accordance with Claim 1, wherein said microorganism is *Rhodococcus erythropolis* DSM 6971.
- 10 5. A process in accordance with Claim 1, wherein said microorganism is *Rhodococcus species* ATCC 21227.
6. A process in accordance with Claim 1, wherein said microorganism is
- 15 *Rhodococcus species* ATCC 27854.
7. A process in accordance with Claim 1, wherein said microorganism is *Brevibacterium sp.* ATCC19653.
- 20 8. A process in accordance with Claim 1 carried out as a one-stage fermentation.
9. A process in accordance with Claim 1 carried out as a two-stage fermentation.
- 25 10. A process in accordance with Claim 1 carried out in the presence of an inducer.
11. A process in accordance with Claim 10, wherein the inducer is a
- 30 compound represented by formula I that is added during the growth of said microorganism.

12. A process in accordance with Claim 1, wherein compound represented by formula I is obtained in at least 70 % yield and at least 93% diastereomeric purity.

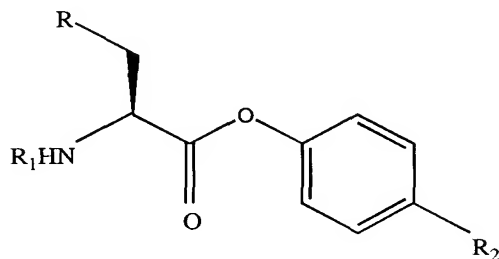
5 13. A process in accordance with Claim 10, wherein compound represented by formula I is obtained in at least 95 % yield and at least 99% diastereomeric purity.

14. In a process of preparing an epoxy compound represented by the formula



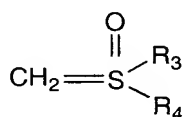
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wherein R is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl and R₁ is a protecting group for the amino function, comprising reacting an aryl ester represented by the formula



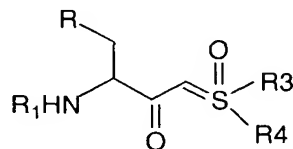
15

wherein R and R₁ are as defined above and R₂ is hydrogen or nitro and may be substituted in the ortho or para position on the phenyl ring with a sulfur ylide compound containing a function represented by the formula



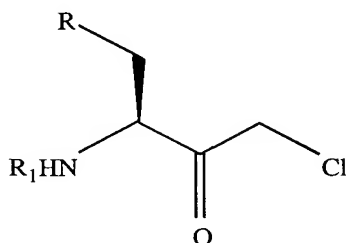
wherein R_3 and R_4 are selected from the group consisting of alkyl, substituted alkyl and aryl to produce an intermediate keto ylide compound represented by the formula

5



wherein R , R_1 , R_3 and R_4 are as defined above, treating said compound represented by formula III with a source of chloride and an organic acid to form a 1-substituted-2-amino-3-oxo-4-chloro butane compound represented by the

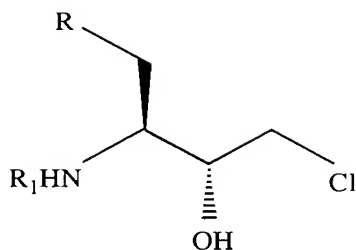
10 formula



wherein R and R_1 are as defined above, reducing said compound to form a 1-chloro-2-hydroxy-3-amino-4-substituted butane compound represented by the

15 formula

20



wherein R and R₁ are as defined above and reacting said hydroxy compound with a base to form said epoxy compound, the improvement wherein the reduction of said 1-chloro-2-oxo-3-amino-4-substituted butane is carried out in accordance
5 with Claim 1 thereby yielding said 1-chloro-2-hydroxy-3-amino-4-substituted butane compound in at least 70 % yield and at least 93% diastereomeric purity.

15. A process in accordance with Claim 14, wherein compound represented by formula I is obtained in at least 95 % yield and at least 99% diastereomeric
10 purity.